PLANITOP G40 ME

Low shrinkage, polymer modified cementitious repair mortar



WHERE TO USE

Repair of damaged or degraded concrete to vertical, horizontal, or overhead situations where light to medium load bearing performance characteristics are required.

Some application examples

· Repair of deteriorated concrete, especially overhead works on ceilings and soffits of beams, damaged by corrosion of the reinforcing steel
· Reinstatement of concrete cover and reprofiling undulations
· General concrete repairs to masonry and concrete including repair of surface irregularities such as exposed aggregate, formwork tie-rod holes, protruding steel, etc.
· Filling of rigid joints (for example between base & column, cracks in floors, joints between walls, etc.

TECHNICAL CHARACTERISTICS

Planitop G40ME is a premixed powdered mortar composed of cement, polymers, graded aggregates, and special additives manufactured from a formula developed in the MAPEI Research Laboratories.

When mixed with water **Planitop G40ME** becomes an easy-to-apply lightweight thixotropic mortar that can be applied without sagging even in substantial thicknesses on overhead and vertical surfaces without formwork.

If **Planitop G40ME** is prepared by only adding water, it must be cured under damp conditions, in order to guarantee that the product's expansive properties develop completely and correctly.
Please note that in common with all other high-quality cementitious based materials, curing of **Planitop G40 ME** is essential under extreme and arid climatic conditions, and/or where correct or adequate curing cannot be maintained, the addition of **Mapecure SRA** is highly recommended in order to ensure the required properties are attained. **Mapecure SRA** is considered a technologically advanced additive system that has the capability of slowing down the evaporation rate of the mixing water thereby promoting the development and efficiency of the hydration process. The addition of **Mapecure SRA** in proportions of up to 0.25% has the ability to reduce drying shrinkage by between 20% and 50%.

Where concrete repairs are required, particularly as a result of chloride-induced corrosion of the reinforcing steel, the incorporation of **Mapeshield I** internal galvanic protection anodes should be considered or **Mapeshield E**, an external galvanic protection sheet which can be used to protect both repaired and unrepaired areas. Please consult the relevant technical data sheet in order to correctly select the type, size, and spacing of the anode system.

When fully cured, **Planitop G40ME** has:
· moderate flexural and compressive strength
· a modulus of elasticity, thermal coefficient of expansion, and permeability coefficients similar to that of medium-quality concrete
· excellent adhesion to existing concrete substrates provided they are roughened, saturated with water and reinforcing bars are first treated with **Mapefer** or **Mapefer 1K**

RECOMMENDATIONS

· Do not use **Planitop G40ME** for anchoring (use more suitable products such as **Mapefill SP ME**, **Mapefill GP ME,** or **Planigrout 300**)
· Do not use **Planitop G40ME** for repairs requiring pumping into formwork (use a flowable MAPEI material such as **Mapegrout Hi-Flow** or **Mapegrout ME06**)
· Do not use **Planitop G40ME** on smooth concrete surfaces without first roughening the surface thoroughly and adding reinforcing steel where required
· Do not add cement or admixtures to **Planitop G40ME**
· Do not add water once the mix has begun to set
· Do not use **Planitop G40ME** at temperatures lower than +5°C
· Prior to use, the product must be stored under shaded, ambient conditions no higher than +35°C
· Do not use **Planitop G40ME** if the bag has been damaged or already opened

APPLICATION PROCEDURE

Preparation of the substrate

Remove any degraded or loose concrete until a sound substrate is achieved. Any previous repair work that is no longer thoroughly bonded must also be removed. Sandblast/grit blast or power brush the reinforcing bars until they are free of dirt, rust, cement laitance, grease, form oil, or forms of contamination.
Saturate the substrate with water. Before repairing with **Planitop G40ME**, remove any excess surface water using compressed air or a sponge if needed.

Preparation of the mortar

Pour into a rust-free, mixing vessel the correct amount of water needed to obtain the consistency required for the application. (for every 25 kg of **Planitop G40ME** powder, 4.25 to 4.75 liters of water for trowelling consistency).
Using a slow speed drill fitted with a suitable mixing paddle, start mixing and slowly add the **Planitop G40ME** to the water in a continuous flow.
Mix for 1 to 2 minutes, making sure the mix is well blended. Scrape any unblended powder from the bottom and the sides of the mixer. Mix again for another 2 to 3 minutes.
· Depending on the amount needed, either a mortar mixer or an electric drill with a mixer attachment may be used. Mix at low speed (typically 300 to 500 rpm) to avoid entraining air
· Avoid mixing manually unless completely unavoidable. If so, mix small amounts at a time for at least 5 to 6 minutes until a completely homogeneous paste is obtained. Keep in mind that mixing by hand requires a larger amount of water. This may adversely affect several of the mortar's characteristics, including mechanical strength, shrinkage, impermeability, etc.

Applying **Planitop G40ME** without formwork in thickness of more than 20 mm should be done only after roughening the surface of the concrete, depending on the situation and the repair geometry, additional reinforcement may need to be added, taking care to cover the reinforcement with a mortar layer of at least 10 mm thick.

Application procedure

The mortar can be trowel or spray applied (using suitable spray equipment) without slumping to overhead or vertical surfaces from a minimum of 10mm to a maximum thickness of 50 mm per layer.
Reinforcing steel bars must be first treated with **Mapefer** or **Mapefer 1K** before applying the **Planitop G40ME**. Where necessary apply a second layer of **Planitop G40ME** before the previous layer has finished setting (within 4 hours at +23°C).
The complete repair cycle calls for smoothing with **Mapefinish** or **Mapelastic**, followed by coating with a protective system such as **Elastocolor**.

Precautions to be taken during and after application

Only use bags of **Planitop G40ME** that have been stored correctly, covered, and stored in a dry place.
In hot weather working conditions, the following precautions should be taken:
· Avoid direct exposure to sunlight for stored material and also mixing equipment
· Use cool water (approx. +20°C) for mixing
· Avoid application during the hottest time of the day and/or direct sunlight
· Mix only sufficient material that can be applied using available labour and equipment to ensure a continuous and uninterrupted application
· After application, **Planitop G40ME** must be properly cured in accordance with a good concrete practice; the surface of the repair exposed to the air must be protected from rapid water evaporation that can cause the formation of surface cracks due to plastic shrinkage, especially in hot and/or windy conditions. To prevent the mixing of water from evaporating too quickly, cure by spraying water on the surface for the first 24 hours, alternatively, apply an anti-evaporation compound such as **Mapecure S** or **Mapecure E.** However, if subsequent paints or coatings are to be applied, as curing compounds generally affect the bond if not fully removed, **Elastocolor Primer** may be considered.

Cleaning

Mortar that has not yet hardened can be removed from tools with water. After setting, cleaning is very difficult and can only be done mechanically.

CONSUMPTION

Approximately 16 kg/m² per 10 mm of thickness.

PACKAGING

25 kg bags.

STORAGE

When stored in dry conditions in the original, unopened bags, **Planitop G40ME** has a shelf life of 12 months. If stored at high temperatures and or high humidity, the shelf life may be reduced.

SAFETY INSTRUCTIONS FOR THE PREPARATION AND APPLICATION

Planitop G40ME contains cement powders which, when mixed with water or upon becoming damp, release alkalis which can be an irritant to the skin. During use, avoid inhalation of the dust and contact with skin and or eyes. Wear suitable protective clothing such as eye protection and gloves. In case of contact with the skin or eyes rinse with plenty of clean water. For further and complete information about the safe use of our product please refer to our latest version of the Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)	
PRODUCT IDENTIFICATION	
Appearance:	powder
Colour:	grey
Maximum diameter of aggregate (mm):	2
Dry solid content (%):	100
Chlorides:	absent
Storage life:	12 months in a dry and ventilated place in original packaging
Health hazard according to EC 1999/45:	irritant. Before using refer to the “Safety instructions for the preparation and application” paragraph and the information on the packaging and Safety Data Sheet
APPLICATION DATA (at +20°C and 50% R.H.)	
Colour of mix:	grey
Mix ratio:	100 parts **Planitop G40ME** with 17-19 parts water when applied with a trowel
Consistency of mix:	plastic-thixotropic
Flow (EN 1015/3) (mm):	150
Density of mix (kg/m³):	1850
pH of mix:	12.5
Application temperature range:	from +5°C to +50°C
Workability of mix:	60 minutes
Drying time between layers:	4 hours
Maximum thickness per layer:	50 mm

FINAL PERFORMANCE (mixing water at 18%)	
Compressive strength (EN 196-1): **– after 1 day:** **– after 7 days:** **– after 28 days:**	 15 35 40
Flexural strength (EN 196-1): **– after 1 day:** **– after 7 days:** **– after 28 days:**	 3.5 5 7
Adhesion to damp concrete (EN 1542) (N/mm²): **– after 28 days at +23°C and 50% R.H.:**	> 1.0
Drying shrinkage according to ASTM C157-93: **- after 7 days:** **- after 28 days:**	 < 300 microstrain < 500 microstrain

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application: for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application: in every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com.

All relevant references for the product are available upon request and from www.mapei.com.

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